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Lorenz Kopp

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EDWARDS ANGELL PALMER & DODGE LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

KO, JASON Y

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/536,624	<b>Applicant(s)</b> KOPP ET AL.	
	<b>Examiner</b> JASON Y. KO	<b>Art Unit</b> 4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 4/26/06 (Prelim. Amend.).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20070521, 20050526</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The specification refers to claims on page 3, line 17. The Claims must begin on a separate sheet of paper in separate section, and those referenced claims are no longer pending.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 45 and 57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding Claim 45, it is unclear which claim it is dependent upon. It is assumed that "Claim 45" should read "Claim 35" instead.

5. Regarding Claim 57, Claim 57 recites the limitation "the slotted fluid delivery openings" in line 2. There is insufficient antecedent basis for this limitation in the claim. The fluid delivery openings were not claimed to be "slotted" in any of the claims that Claim 57 depends upon.

***Claim Objections***

6. Claims 59-60 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.
7. Claim 58 is directed to connecting channels located in the housing. However, Claims 59 and 60, which depend on Claim 59, are directed to connecting channels which are located on the housing. These claims appear to be mutually exclusive from the claimed limitation of Claim 58, which they both depend on.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 4132

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**11. Claims 35-38, 51-55, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over KIAT et al. ("KIAT") (USPN 6,250,318), in view of SILVERNAIL et al. (USPN 4,691,722), further in view of JOHNSON (USPN 5,334,352).**

12. Claim 35 is directed to a nozzle arrangement for releasing a treatment fluid,

a. with a longitudinal housing with at least one fluid feed opening for feeding the treatment fluid and at least one fluid delivery opening formed in the housing for releasing the treatment fluid,

b. whereby in the housing a fluid channel is formed for feeding the treatment fluid from the fluid feed opening to the at least one fluid delivery opening, and whereby the section of the fluid channel reduces from the fluid feed opening in the longitudinal direction of the housing,

c. wherein the housing is plastic, and at or in the nozzle arrangement at least one stiffening member made from metal and extending in the longitudinal direction of the nozzle arrangement is provided, and

Art Unit: 4132

d. in the nozzle arrangement a longitudinal insert, in which a plurality of distribution openings spaced from one another in the longitudinal direction is formed, is arranged so that the fluid channel defined by the insert is in communication with the at least one fluid delivery opening via the distribution openings, in order to feed the treatment fluid from the fluid channel via the distribution openings to the at least one fluid delivery opening.

13. KIAT teaches a nozzle arrangement (cleaning apparatus with a spray wand that discharges fluids, see abstract) for releasing a treatment fluid (circulates wash fluid, abstract, lines 5-7), with a longitudinal housing (circular conduit 1200, see Fig. 18B) with at least one fluid feed opening (near reference numeral 1340, Fig. 18B) for feeding the treatment fluid (expected purpose of a fluid feed opening) and at least one fluid delivery opening (microtunnel 1380, Fig. 18B) formed in the housing (laying out across conduit 1200, col. 9 lines 18-19) for releasing the treatment fluid (fluid flows through microtunnels 1380, Fig. 18B and see col. 9 line 47)

whereby in the housing a fluid channel (inner fluid chamber space 1360, Fig. 18B) is formed for feeding the treatment fluid from the fluid feed opening (near reference numeral 1340, Fig. 18B) to the at least one fluid delivery opening (microtunnel 1380, Fig. 18B), and whereby the section of the fluid channel reduces from the fluid feed opening in the longitudinal direction of the housing (from left to right of Fig. 18B), and

in the nozzle arrangement a longitudinal insert (velocity balance beam 1280, col. 9 lines 9-11 and Claim 1, col. 11 lines 17-31), in which a plurality of distribution openings spaced from one another in the longitudinal direction (at least one row of

Art Unit: 4132

holes disposed longitudinally, Claim 1, col. 11 lines 17-31) is formed, is arranged so that the fluid channel defined by the insert is in communication with the at least one fluid delivery opening via the distribution openings, in order to feed the treatment fluid from the fluid channel via the distribution openings (top plate is adapted to allow fluid from said row of holes to spray therethrough, Claim 1, col. 11, lines 29-31) to the at least one fluid delivery opening (row of holes adapted to spray downwards, Claim 1, col. 11 lines 13-14).

14. KIAT does not teach the housing to be plastic, nor does it teach a stiffening member made from metal and extending in the longitudinal direction of the nozzle arrangement.

15. SILVERNAIL et al. teaches a system for liquid spray processing that uses a plastic housing (bowl 12, col. 3, lines 23-26). SILVERNAIL et al. teaches the use of plastic as advantageous because the plastic can be highly inert to the deteriorating effects of the highly active chemicals used in the spray processing of wafers. See col. 3 lines 23-26.

16. KIAT and SILVERNAIL et al. are analogous in the art of nozzles.

17. It would have been obvious to one of ordinary skill in the art at the time of the invention and to use the nozzle arrangement as taught by KIAT and modify it with the plastic housing of SILVERNAIL et al. to take advantage of the recognized benefits of plastic housings.

18. SILVERNAIL et al. also teaches a stiffening member (turntable 18, col. 3 lines 37-38), made from metal (made of metal, col. 3 line 38) and extending in the

Art Unit: 4132

longitudinal direction of the nozzle arrangement (the longitudinal direction is radial here, See Fig. 1). The limitation “stiffening” is a functional limitation and is deemed to be a latent property of the prior art since the prior art is substantially identical in composition and/or structure MPEP 2145 (II).

19. KIAT and SILVERNAIL et al. are analogous in the art of nozzles.

20. All of the claimed component parts are known by KIAT and SILVERNAIL et al. The only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single reference.

21. One of ordinary skill in the art could have combined the nozzle arrangement as taught by KIAT with the metal stiffening member of SILVERNAIL et al., because in adding the metal stiffening member, both the nozzle arrangement and the stiffening member would have performed their separate functions.

22. Thus, one of ordinary skill in the art at the time of invention would have recognized that the results of the combination were predictable, because a nozzle arrangement could be combined with a metal stiffening member, to achieve the predictable result of a nozzle arrangement having a stiffening member.

23. KIAT in view of SILVERNAIL et al. fails to teach a longitudinal insert, in which a plurality of distribution openings is spaced from one another in the longitudinal direction.

24. JOHNSON teaches a longitudinal insert (22, Figs 2 and 6-7 and col. 3 lines 29-35), in which a plurality of distribution openings (bottom portion of insert 22 that aligns with fluid delivery openings 16, Fig. 2) spaced from one another (there are multiple openings spaced apart from one another, aligned with fluid delivery openings 16, Fig. 2)



Art Unit: 4132

in the longitudinal direction (direction from left to right, Fig. 2) is formed, is arranged so that the fluid channel (central area defined by inserts 22, Fig. 2) defined by the insert is in communication (fluid communication, Fig. 2) with the at least one fluid delivery opening (16, Fig. 2) via the distribution openings (the bottom portion of insert 22, Fig. 2), in order to feed the treatment fluid from the fluid channel via the distribution openings to the at least one fluid delivery opening (this function is expected in view of the structure, see Fig. 2). JOHNSON teaches that by using an insert, the cross-sectional area of the elongated manifold cavity can be modified, which is effective for improved flow-splitting. See abstract.

25. KIAT in view of SILVERNAIL et al. and JOHNSON are analogous in the art of nozzles.

26. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the nozzle of KIAT in view of SILVERNAIL et al. and to modify it with the longitudinal insert of JOHNSON, for improved flow-splitting.

27. Regarding Claim 36, KIAT teaches the fluid channel (1360, Fig. 18B) to reduce continuously from the fluid feed opening in the longitudinal direction (from left to right of Fig. 18B) of the housing, and is thus considered to be taught by KIAT in view of SILVERNAIL et al. and JOHNSON.

28. Regarding Claims 37 and 39, KIAT in view of SILVERNAIL et al. fails to teach the distribution openings. JOHNSON teaches the distribution openings (bottom portion of insert 22, Fig. 2) of the insert (22, Fig. 2) to be positioned congruent (Fig. 2) to the fluid delivery openings (16, Fig. 2) in the housing. "Positioned congruent" is interpreted to

Art Unit: 4132

mean aligned or arranged at the same horizontal plane. The distribution openings as disclosed in Fig. 2 appear to have the same diameter. If it is shown that the distribution openings do not have the same diameter, it would have still been obvious to one of ordinary skill in the art, because the openings appear to have the same diameter.

JOHNSON teaches that by using an insert, the cross-sectional area of the elongated manifold cavity can be modified, which is effective for improved flow-splitting. See abstract.

29. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the nozzle of KIAT in view of SILVERNAIL et al. and to modify it with the longitudinal insert of JOHNSON, for improved flow-splitting.

30. Regarding Claim 38, KIAT teaches the fluid channel (1360, Fig. 18B) to reduce from the fluid feed opening in the longitudinal direction (from left to right of Fig. 18B) of the housing from a number of sides (top and bottom of Fig. 18B), and is thus considered to be taught by KIAT in view of SILVERNAIL et al. and JOHNSON.

31. Regarding Claim 51, KIAT teaches the at least one fluid feed opening (where reference numeral 1340 is) being provided at a longitudinal end (the left end) of the housing, and is thus considered to be taught by KIAT in view of SILVERNAIL et al. and JOHNSON. See Fig. 18B.

32. Claim 52 is directed to a nozzle arrangement wherein the at least one fluid feed opening is provided at a middle section of the housing.

33. KIAT in view of SILVERNAIL et al. fails to teach a nozzle arrangement wherein the at least one fluid feed opening is provided at a middle section of the housing.

Art Unit: 4132

34. JOHNSON teaches at least one fluid feed opening (inlet passage 25, Fig. 1) provided at a middle section of the housing (See Fig. 1). JOHNSON suggests that having a fluid feed opening provided at a middle section of the housing is effective for improved flow-splitting.

35. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a nozzle as taught by KIAT in view of SILVERNAIL et al. and to modify it with a fluid feed opening provided at a middle section of the housing as taught by JOHNSON for improved flow-splitting.

36. Regarding Claim 53, KIAT teaches the housing to have a plurality of fluid delivery openings (microtunnels 1380) spaced from one another in the longitudinal direction of the housing (from left to right). See Fig. 18B.

37. Regarding Claim 54, KIAT teaches fluid delivery openings that are round. See Fig. 18C.

38. Regarding Claim 55, KIAT appears to disclose fluid delivery openings (1380, Figs. 18B-C and 19D) that have the same dimensions. If it is shown that the fluid delivery openings do not have the same dimensions, it would have still been obvious to one of ordinary skill in the art to use openings with the same dimensions because the openings appear to have the same dimensions and because KIAT suggests that having fluid delivery openings of the same dimensions is effective for cleaning using a nozzle. See disclosure.

Art Unit: 4132

39. The same motivation to combine KIAT in view of SILVERNAIL et al. with JOHNSON, as applied to Claim 35, applies to Claims 53-55, because the claim limitations are imported by KIAT, the primary reference.

40. The nozzle arrangement of KIAT satisfies the limitations as claimed in these claims with the same embodiment shown in Fig. 18B. One of ordinary skill in the art at the time of invention would have recognized that the results of the combination were predictable, because a nozzle arrangement can be of multiple different arrangements to achieve the predictable result of having fluid delivered through the nozzle arrangement.

**41. Claims 42-43, 48-50, and 58-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over KIAT et al. ("KIAT") (USPN 6,250,318), in view of SILVERNAIL et al. (USPN 4,691,722), further in view of JOHNSON (USPN 5,334,352), further in view of DI CORPO (USPN 3,212,719).**

42. Claim 42 is directed a nozzle arrangement wherein the distribution openings have a differing diameter. Claim 43 is further directed to the diameter of the distribution openings reducing from the fluid feed opening in the longitudinal direction of the housing.

43. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

44. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach an arrangement wherein the distribution openings have a differing diameter.

Art Unit: 4132

45. A diameter is defined as “a straight line passing from side to side of any figure or body, through its center,” and is interpreted consistent with this meaning.

Dictionary.com, definition 1.b.

46. DI CORPO teaches a nozzle arrangement wherein the distribution openings (the middle strip containing openings such as 48, see Fig. 2) have a differing diameter. See Fig. 2. The diameters differ because the distances from side to side vary when moving along the longitudinal (left-to-right) direction of the housing. See Fig. 2. Furthermore, the diameters reduce from the fluid feed opening in the longitudinal direction of the housing because of the nature of the shapes of the openings. See Fig. 2. DI CORPO suggests that using such a configuration is efficient for producing a water curtain spray. See col. 3 lines 34-42.

47. KIAT in view of SILVERNAIL et al., further in view of JOHNSON and DI CORPO are analogous in the art of nozzles.

48. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the nozzle of KIAT in view of SILVERNAIL et al., further in view of JOHNSON, and modify it with the nozzle of DI CORPO to be able to efficiently produce a water curtain spray.

49. Claims 48-50 are directed to a nozzle arrangement wherein between the at least one fluid delivery opening and the fluid channel and immediately before the at least one fluid delivery opening a storage chamber is formed.

50. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

Art Unit: 4132

51. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to teach a nozzle arrangement wherein between the at least one fluid delivery opening and the fluid channel and immediately before the at least one fluid delivery opening a storage chamber is formed.

52. DI CORPO teaches a nozzle arrangement in which between the at least one fluid delivery opening (any of 52-62, Fig. 2) and the fluid channel (upper part of the housing) and immediately before the at least one fluid delivery opening a storage chamber (the portion between the housing and delivery openings, Fig. 2) is formed for pressure distribution (expected result from the structure). DI CORPO fails to teach the fluid channel as claimed in Claim 35, but the fluid channel of KIAT in view of SILVERNAIL et al., further in view of JOHNSON as described above is relied upon.

53. Regarding Claim 49, the storage chamber is in the form of a recess (any of the gaps not 48, Fig. 2) provided in the longitudinal insert (middle piece between delivery openings 52-62 and housing 12, Fig. 2) on the side of the distribution openings (48, Fig. 2) turned towards the at least one fluid delivery opening (54a-56a, Fig. 2).

54. Regarding Claim 50, DI CORPO teaches a nozzle arrangement wherein all distribution openings (48, Fig. 2) are arranged spatially at an offset (placed at an angle) to the at least one fluid delivery opening (54a-56a, Fig. 2) in such a way that the treatment fluid flows out of the fluid delivery openings via the storage chamber only after at least two changes in direction (fluid flows left to right, the changes direction upward at an angle and changes direction/angles again, Fig. 2).

55. Because one of ordinary skill in the art could have combined a nozzle arrangement as taught by KIAT in view of SILVERNAIL et al., further in view of JOHNSON with a storage chamber forming on the side of distribution openings as taught by DI CORPO, and the results of the combination would be predictable, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a nozzle arrangement wherein a storage chamber is formed between the fluid delivery opening and the fluid channel, and have treatment fluid flow out of the fluid delivery openings via the storage chamber only after two changes in direction. The resulting nozzle arrangement would yield the claimed invention.

56. The same motivation to combine KIAT in view of SILVERNAIL et al., further in view of JOHNSON with DI CORPO is applied to Claims 48-50 because the nozzle arrangement of DI CORPO can satisfy the limitations as claimed with the same embodiment shown in Fig. 2.

57. Claims 58 is directed to a plurality of connecting channels spaced from one another and extending widthways in the housing, formed in the longitudinal direction of the housing, which communicate at one end with the fluid channel in the housing and at the other with at the least one fluid delivery opening. Claims 59-60 are directed to a cover which is positioned on the housing, wherein the cover is positioned with a fluid-tight seal at the housing.

58. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

Art Unit: 4132

59. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to teach a plurality of connecting channels spaced from one another and extending widthways in the housing, formed in the longitudinal direction of the housing, which communicate at one end with the fluid channel in the housing and at the other with at the least one fluid delivery opening.

60. Regarding Claim 58, DI CORPO teaches a plurality of connecting channels (middle areas for fluid flow 42-48, Fig. 2) spaced from one another and extending widthways in the housing, formed in the longitudinal direction of the housing, which communicate at one end (bottom end, Fig. 2) with the fluid channel in the housing (12, Fig. 2) and at the other end (top end, Fig. 2) with the at least one fluid delivery opening (any of 52-62, Fig. 2). Regarding Claim 59, the middle portion can be referred to as a “cover” which is positioned on the housing. Regarding Claim 60, the cover is positioned with a fluid-tight seal (O-rings 50, Fig. 2 and col. 2 lines 50-53) at the housing (12, Fig. 2). Regarding Claims 61-62, the connecting channels appeared to be evenly spaced in the longitudinal direction of the housing and distributed essentially over the entire length of the housing. See Fig. 2. Regarding Claim 63, each connecting channel extends essentially in a straight line transversely to the longitudinal direction of the housing. Furthermore, each connecting channel is straight line transversely, if the connecting channels are only reference numerals 48. Regarding Claim 64, each connecting channel opens out into one of the fluid delivery openings (52-62, Fig. 2) at either side of the housing (at the top side, Fig. 2).



Art Unit: 4132

61. The same motivation to combine KIAT in view of SILVERNAIL et al., further in view of JOHNSON with DI CORPO as applied to Claims 48-50 applies to Claims 58-64 because the nozzle arrangement of DI CORPO can satisfy the limitations as claimed with the same embodiment shown in Fig. 2.

62. Because one of ordinary skill in the art could have combined a nozzle arrangement as taught by KIAT in view of SILVERNAIL et al., further in view of JOHNSON, with a storage chamber as taught by DI CORPO, and because the results of the combination would be predictable, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a nozzle arrangement wherein a storage chamber is formed between the fluid delivery opening and the fluid channel. The resulting nozzle arrangement would yield the claimed invention.

63. Regarding Claim 65 is directed to a nozzle arrangement wherein a further longitudinal insert, conical in its longitudinal direction, is arranged in the housing and defines the fluid channel in conjunction with the longitudinal insert having the distribution openings.

64. KIAT teaches a longitudinal insert, which is conical in its longitudinal direction (1280, Fig. 18B) arranged in the housing (1200, Fig. 18B). The fluid channel would be expected to be defined by the longitudinal inserts of KIAT and JOHNSON because fluid will flow in the area (channel). SILVERNAIL et al. teaches the use of multiple inserts and various shapes for inserts. See Fig. 2 and col. 3 lines 32-35.

65. Because it is known in the art to include a nozzle arrangement in which a longitudinal insert, conical in its longitudinal direction (Fig. 18B, KIAT) or a longitudinal

Art Unit: 4132

insert having distribution openings (Fig. 18C, KIAT or Fig. 2, SILVERNAIL et al.) and arranged in the housing is known, and also the arrangement of multiple inserts within a housing, and the results of the combination would be predictable, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a nozzle arrangement wherein a conical longitudinal insert and a longitudinal insert having distribution openings are arranged. The resulting nozzle arrangement would yield the claimed invention.

**66. Claims 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over KIAT et al. ("KIAT") (USPN 6,250,318), in view of SILVERNAIL et al. (USPN 4,691,722), further in view of JOHNSON (USPN 5,334,352), further in view of ZIMMER et al. (USPN 4,550,681).**

67. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

68. Claims 44-46 are directed to distribution openings with countersinkings on the side.

69. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach distribution openings with countersinkings on the side.

70. ZIMMER et al. teaches an applicator arrangement wherein the distribution openings are provided with countersinkings on their side turned towards the fluid channel. Regarding Claim 45, ZIMMER et al. teaches the countersinking to have a different depth (apparent on the face of Fig. 2, cavities 21, 18, 17, 16, 15 or Fig. 16). Regarding Claim 46, the depth of the countersinkings (cavity arrangements of Fig. 16

Art Unit: 4132

become deeper in the longitudinal direction, Fig. 16) increases from the fluid feed opening (20, Fig. 16), in the longitudinal direction of the housing (downward on Fig. 16). Zimmer et al. teaches that such a channel system allows for the efficient and uniform application of flowable material. See col. 1 lines 7-10.

71. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the nozzle arrangement of KIAT in view of SILVERNAIL et al., further in view of JOHNSON, with the countersinkings of ZIMMER et al., to have a nozzle arrangement that is capable of uniform application of flowable material.

**72. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over KIAT et al. ("KIAT") (USPN 6,250,318), in view of SILVERNAIL et al. (USPN 4,691,722), further in view of JOHNSON (USPN 5,334,352), further in view of MORINE et al. (USPN 4,747,541).**

73. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

74. Claim 47 is directed to a housing that is essentially parallelepiped in shape and a stiffening member that is essentially U-shaped.

75. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach a housing that is essentially parallelepiped in shape and a stiffening member that is essentially U-shaped.

76. MORINE et al. teaches a nozzle arrangement including a housing that is essentially parallelepiped (see Fig. 5) in shape and an essentially U-shaped stiffening member (generally U-shaped guide members 18 and 20, col. 3 lines 19-22) extending in

Art Unit: 4132

the longitudinal direction (longitudinal direction can be either direction the member extends in, into the page or up-down, see Fig. 2) at the nozzle arrangement. The limitation “stiffening” is a functional limitation and is deemed to be a latent property of the prior art since the prior art is substantially identical in composition and/or structure MPEP 2145 (II).

77. One of ordinary skill in the art at the time of the invention could have included a nozzle arrangement in which a housing is essentially parallelepiped and a stiffening member that is essentially U-shaped at the nozzle arrangement, and the results of the combination of having a parallelepiped housing and an essentially u-shaped stiffening member would be predictable. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a nozzle arrangement with an essentially parallelepiped housing and an essentially U-shaped stiffening member. The resulting nozzle arrangement would yield the claimed invention.

**78. Claims 40 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over KIAT et al. (“KIAT”) (USPN 6,250,318), in view of SILVERNAIL et al. (USPN 4,691,722), further in view of JOHNSON (USPN 5,334,352), further in view of HAN et al. (USPN 5,850,841).**

79. Claim 40 is directed a nozzle arrangement wherein the length of the distribution openings increases from the fluid feed opening in the longitudinal direction of the housing.

80. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

Art Unit: 4132

81. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach an arrangement wherein the length of the distribution openings increases from the fluid feed opening in the longitudinal direction of the housing.

82. HAN teaches a nozzle arrangement wherein the length of the distribution openings increases from the fluid feed opening in the longitudinal direction of the housing. See Fig. 2D.

83. One of ordinary skill in the art at the time of the invention could have included a nozzle arrangement wherein the length of the fluid delivery openings increases from the fluid feed opening, and it is also well known in the art to use inserts with delivery openings and to align the inserts with the fluid delivery openings. The results of the combination of having inserts aligned with the fluid delivery openings of the nozzle housing would be predictable. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a nozzle arrangement wherein the length of the distribution increases from the fluid feed opening in the longitudinal direction of the housing. The resulting nozzle arrangement would yield the claimed invention.

84. Claim 56 is directed to a nozzle arrangement wherein the fluid delivery openings have a reducing width from the fluid feed opening over the length of the housing or a reducing diameter over the length of the housing.

85. KIAT in view of SILVERNAIL et al., further in view of JOHNSON is relied upon as described above in the rejection of Claim 35.

Art Unit: 4132

86. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach fluid delivery openings have a reducing width from the fluid feed opening over the length of the housing or a reducing diameter over the length of the housing.

87. HAN et al. teaches fluid delivery openings (18-1, Fig. 2A) have a reducing width from the fluid feed opening over the length of the housing or a reducing diameter over the length of the housing. See Fig. 2A.

88. KIAT in view of SILVERNAIL et al., further in view of JOHNSON and HAN et al. are analogous art in the art of nozzles.

89. KIAT in view of SILVERNAIL et al., further in view of JOHNSON differs from the claimed invention by the substitution of the fluid delivery openings of HAN et al.

90. The nozzle arrangements of KIAT in view of JOHNSON and HAN et al. were well known in the art at the time of the invention.

91. One of ordinary skill in the art could have substituted the fluid delivery openings of KIAT in view of JOHNSON with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been predictable in that the nozzle would comprise fluid delivery openings that reduced in width over the length of the housing.

92. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid delivery openings of KIAT in view of JOHNSON with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been predictable in that the nozzle would comprise fluid delivery openings that reduced in width over the length of the housing.

Art Unit: 4132

93. Claim 57 is directed to a nozzle arrangement wherein the fluid delivery openings are formed in a plurality of rows offset from one another in the housing.

94. KIAT in view of JOHNSON fails to explicitly teach fluid delivery openings are formed in a plurality of rows offset from one another in the housing.

95. HAN et al. teaches fluid delivery openings (18-1, Fig. 2C) formed in a plurality of rows offset from one another (3 different rows arranged in different horizontal planes) in the housing. See Fig. 2C.

96. KIAT in view of SILVERNAIL et al., further in view of JOHNSON and HAN et al. are analogous art in the art of nozzles.

97. KIAT in view of SILVERNAIL et al., further in view of JOHNSON differs from the claimed invention by the substitution of the fluid delivery openings of HAN et al.

98. The nozzle arrangements of KIAT in view of JOHNSON and HAN et al. were well known in the art at the time of the invention.

99. One of ordinary skill in the art could have substituted the fluid delivery openings of KIAT in view of SILVERNAIL et al., further in view of JOHNSON with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been predictable in that the nozzle would comprise fluid delivery openings that are formed in a plurality of rows offset from one another in the housing.

100. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid delivery openings of KIAT in view of SILVERNAIL et al., further in view of JOHNSON, with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been predictable in that the nozzle would

Art Unit: 4132

comprise fluid delivery openings that are formed in a plurality of rows offset from one another in the housing.

101. Claim 58 is directed to nozzle arrangement wherein in the housing a plurality of connecting channels spaced from one another and extending widthways in the housing are formed in the longitudinal direction of the housing, which communicate at one end with the fluid channel in the housing and at the other with the at least one fluid delivery opening.

102. KIAT in view of SILVERNAIL et al., further in view of JOHNSON fails to explicitly teach fluid delivery openings are formed in a plurality of rows offset from one another in the housing.

103. HAN et al. teaches fluid delivery openings (18-1, Fig. 2C) formed in a plurality of rows offset from one another (3 different rows arranged in different horizontal planes) in the housing. See Fig. 2C.

104. KIAT in view of SILVERNAIL et al., further in view of JOHNSON and HAN et al. are analogous art in the art of nozzles.

105. KIAT in view of SILVERNAIL et al., further in view of JOHNSON differs from the claimed invention by the substitution of the fluid delivery openings of HAN et al.

106. The nozzle arrangements of KIAT in view of SILVERNAIL et al., further in view of JOHNSON and HAN et al. were well known in the art at the time of the invention.

107. One of ordinary skill in the art could have substituted the fluid delivery openings of KIAT in view of SILVERNAIL et al., further in view of JOHNSON with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been



Art Unit: 4132

predictable in that the nozzle would comprise fluid delivery openings that are formed in a plurality of rows offset from one another in the housing.

108. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid delivery openings of KIAT in view of SILVERNAIL et al., further in view of JOHNSON, with the fluid delivery openings as taught by HAN et al., and the results of the substitution would have been predictable in that the nozzle would comprise fluid delivery openings that are formed in a plurality of rows offset from one another in the housing.

### ***Conclusion***

109. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON Y. KO whose telephone number is 571-270-7451. The examiner can normally be reached on Monday-Thursday; 9:30am-7:00pm.

110. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL LAVILLA can be reached on 571-272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

111. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 4132

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JYK/  
Jason Y. Ko  
Patent Examiner, Art Unit 4132  
28 January 2009

**/Michael La Villa/  
Michael La Villa  
Supervisory Patent Examiner,  
Art Unit 4132  
2 February 2009**